Application No. 10/648,776
Reply to Office Action dated March 3, 2009, the Advisory Action dated June 30, 2009 and the
Notice of Appeal filed August 3, 2009

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.   (Previously Presented) A method for filtering the noise of a sequence of digital images in video format comprising:

processing a first video image of the sequence to obtain a corresponding improved video image with reduced noise;

processing at least one pixel of a second video image of the sequence that temporally follows said first video image, said processing the at least one pixel providing a corresponding filtered pixel and said processing the at least one pixel including:

selecting a first set of pixels including the at least one pixel and a plurality of pixels of the second video image spatially adjacent to the at least one pixel;

selecting a second set of pixels including pixels of the corresponding improved video image homologous with the pixels of said first set of pixels;

carrying out a digital filtering of a first type using pixels from said first set of pixels selected from the second video image and pixels from said second set of pixels selected from the corresponding improved video image to generate the corresponding filtered pixel.

2.   (Previously Presented) A method in accordance with Claim 1, further comprising :

carrying out a first evaluation of motion of the at least one pixel, using pixels forming part of said first set of pixels and part of said second set of pixels; and in which said at least one pixel is such that said first evaluation of motion is smaller than a first threshold value.

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3.   (Previously Presented) A method in accordance with Claim 1, further
comprising :

processing another pixel of said second video image, said processing the another
pixel providing a corresponding another filtered pixel and said processing the another pixel
including:

selecting a third set of pixels including the another pixel and a plurality of pixels
of the second video image spatially adjacent to it;

selecting a fourth set of pixels including pixels of the improved video image
homologous with the pixels of said third set of pixels;

carrying out another evaluation of motion of the another pixel, using pixels
forming part of said third set of pixels and part of said fourth set of pixels;

whenever the another evaluation of motion is smaller than said first threshold
value, carrying out a digital filtering of a second type that generates the another filtered pixel by
using exclusively pixels forming part of said third set of pixels.

4.   (Previously Presented) A method in accordance with Claim 1, wherein
each video image of the sequence is made up of a respective pixel matrix, the pixels of said
respective pixel matrix being associated on the basis of their respective positions with one of a
set of chromatic components, and wherein said first set of pixels and said second set of pixels
comprise pixels associated with the same chromatic component of the at least one pixel.

5.   (Previously Presented) A method in accordance with Claim 4, wherein
each video image of the sequence is in Bayer CFA format and said chromatic components form
part of the set including the color red, the color green and the color blue.

6.   (Previously Presented) A method in accordance with Claim 5, wherein
selecting the first set of pixels aligns a selection matrix according to the chromatic component of
the at least one pixel, the selection matrix being such as to select pixels that are situated in the

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neighborhood of the at least one pixel and having the same chromatic component as said at least

one pixel and discard pixels having a different chromatic component as said at least one pixel,

the selection matrix being identical for the chromatic components red and blue.

7.　　(Previously Presented) A method in accordance with Claim 1 further

comprising:

estimating a statistical parameter σ_n^{GL} representative of global noise present in

said first video image, the digital filtering of the first type utilizing said statistical parameter.

8.　　(Previously Presented) A method in accordance with Claim 7, further

comprising:

selecting a plurality of pixels of the first video image;

calculating a plurality of local estimates;

wherein calculating the plurality of local estimates includes calculating for each

given pixel of said plurality of pixels a respective estimate of a statistical parameter

representative of local noise present in a neighborhood of the given pixel; and

wherein said estimate of the statistical global noise parameter σ_n^{GL} is obtained

from said plurality of local estimates.

9.　　(Original) A method in accordance with Claim 8, wherein said local

estimates are local variance measures.

10.　　(Previously Presented) A method in accordance with Claim 8, wherein

said plurality of pixels includes pixels forming part of homogeneous regions of the first video

image.

11.　　(Previously Presented) A method in accordance with Claim 1, further

comprising:

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identifying a subset of pixels from part of said first set of pixels and part of said

second set of pixels during a selection phase carried out in accordance with a Duncan Range

Test, wherein said digital filtering of the first type utilizes the subset of pixels.

12.   (Previously Presented) A method in accordance with Claim 3, further

comprising:

estimating for the another pixel another statistical parameter representative of the

noise present on the pixels of said third set of pixels, said another statistical parameter estimated

according to a specific color of the another pixel, the digital filtering of the second type utilizing

said another parameter.

13.   (Previously Presented) A computer readable memory programmed to

direct a filter for reducing noise in a sequence of images in CFA format, the filter operable in

accordance with the method of claim 1.

14.   (Previously Presented) An acquisition device, comprising:

a sensor including a CFA filter, wherein the sensor is operable to acquire a

sequence of digital images in CFA format, and wherein the CFA filter is operable to process the

sequence of digital images in CFA format in accordance with the method of claim 1.

15.   (Previously Presented) A method of filtering noise from a digital video

image comprising:

processing a first image to generate an improved image;

processing a second, subsequent image after processing the first image;

selecting a first pixel from the second, subsequent image during the processing of

the second, subsequent image;

selecting a first set of pixels in the second, subsequent image that have a

predetermined spatial relationship to the first pixel;

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locating a second set of pixels in the first image that correspond to the first set of pixels in the second, subsequent image; and

filtering the first pixel using data from both the first set of pixels and the second set of pixels.

16.   (Previously Presented) The method according to Claim 15 further comprising:

performing spatial filtering on the first pixel;

determining a motion component between the first set of pixels and the second set of pixels; and

carrying out a motion compensator filtering if the motion component between the first set of pixels and the second set of pixels is above a selected threshold and not carrying out motion compensation filtering if the motion component between the first set of pixels and the second set of pixels is below a selected threshold.

17.   (New) A method in accordance with Claim 2, further comprising:

producing a provisional filtered pixel in accordance with a Duncan Range Test, said provisional filtered pixel obtained from a subset of pixels from part of said first set of pixels and part of said second set of pixels.

18.   (New) A method in accordance with Claim 17, further comprising:

carrying out a second evaluation of motion of the at least one pixel and when said at least one pixel is such that said second evaluation of motion is smaller than a second threshold value, then setting said corresponding filtered pixel according to the provisional filtered pixel.

19.   (New) A method in accordance with Claim 17, further comprising:

carrying out a second evaluation of motion of the at least one pixel and when said at least one pixel is such that said second evaluation of motion is not smaller than a second

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threshold value, then deriving said corresponding filtered pixel after subjecting the provisional

filtered pixel to a smoothing operation.

20.   (New) A method in accordance with Claim 11 wherein identifying said

subset of pixels includes forming a selection interval of pixels similar to the pixel to be filtered,

said pixels similar to the pixel to be filtered correlated with the standard deviation of the noise to

be filtered.